

## **ABSTRACT**

A method and apparatus for computing soft decision input metrics to a turbo decoder includes circuits associated with eight-ary phase shift keyed (8PSK) modulation and sixteen-ary quadrature amplitude modulation (16QAM). In both implementations log-likelihood ratio (LLR) metrics on code symbols are estimated as products of various constant values and various combinations of the in-phase and quadrature components of a demodulated soft decision. In the implementation associated with the 16QAM modulation scheme, an estimate of the carrier-signal-to-interference (C/I) ratio is also used to estimate some of the LLR metrics. Estimates of the LLR metrics may also be obtained in association with generalized square QAM and M-ary PSK modulation schemes including, e.g., 64QAM, 256QAM, and 16PSK.